

REMARKS

This Amendment After Final is filed in response to the Final Office Action mailed on December 30, 2005. In the Office Action, Claim 20 is rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over "Acetylation of Solid Wood Using Microwave Heating, Part 2. Experiments in Laboratory Scale" by Breliid et al. Further, Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Breliid et al. in view of U.S. Patent No. 4,804,384 (Rowell et al.). Claims 1-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Breliid in view of U.S. Patent No. 3,094,431 (Goldstein et al.).

By the present Amendment, Applicants amended Claims 1, 12, 19 and 20 and canceled Claims 11, 13 and 15. Attorney for Applicants appreciates the opportunity afforded by Examiner Kiliman to conduct a telephonic interview which took place on Monday, February 13, 2006. In that interview, Attorney for Applicants proposed amendment of Claims 1, 19 and 20 to define heating of wood in a frequency range from about 6 MHz to about 100 MHz. Examiner Kiliman indicated his agreement that, if it could be shown that the cited references did not disclose or teach this range, that the claims would be held allowable. In addition, Applicants submit, along with this Amendment, a Declaration explaining the disadvantages of the prior art and the advantages of the present invention. Applicants assert that the application is in condition for allowance in view of the amendments and for the reasons that follow. Notice to that effect is requested.

Claim 20 is rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over "Acetylation of Solid Wood Using Microwave Heating, Part 2. Experiments in Laboratory Scale" by Breliid et al.; Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Breliid et al. in view of U.S. Patent

No. 4,804,384 (Rowell et al.); and Claims 1-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Breliid in view of U.S. Patent No. 3,094,431 (Goldstein et al.).

However, Applicants amended independent Claims 1, 19 and 20 to refer to methods for esterifying wood and/or the products of esterification in which impregnated wood is heated in a frequency range of about 6 MHz to about 100 MHz to produce esterified wood. Applicants assert that support for this amendment can be found in the specification on page 4, lines 18-19. More specifically, Applicants state that on page 4 that the wood can be heated in a frequency "ranging anywhere from about 6 MHz to about 915 MHz".

None of Breliid et al., Rowell et al., or Goldstein et al., taken either singly or in combination disclose, teach or suggest heating of wood in a frequency range of about 6 MHz to about 100 MHz. Breliid et al. disclose heating of wood at a frequency of 2450 MHz which is a microwave range and well above the claimed frequency range. Nowhere in the reference is there a disclosure or teaching that the frequency can be in the range from about 6 MHz to about 100 MHz.

For a reference to be anticipatory, the reference must exactly describe the claimed invention. Because Breliid does not describe a range from about 6 MHz to about 100 MHz, the reference is not anticipatory. Accordingly, the rejection of Claim 20 as being anticipated by Breliid et al. is improper.

Furthermore, Claims 1, 19 and 20 are not obvious in view of Breliid et al. For a *prima facie* case of obviousness, there must first be either a suggestion or a motivation in the prior art reference or knowledge generally available to modify a reference. There must be a reasonable expectation of success, and all the claim limitations must be taught or suggested in the prior art references. As the reference does not teach or suggest a frequency range from about 6 MHz to

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about 100 MHz, Applicants assert that Claims 1, 19 and 20 are not obvious in view of Breli et al.

Rowell et al. is merely relied upon to teach impregnation times. Goldstein et al. is merely relied upon to teach the removal of moisture using a solvent. Nowhere in Rowell et al. or Goldstein et al. is a disclosure or teaching of heating wood in a frequency range from about 6 MHz to about 100 MHz. Accordingly, Applicants assert that one of ordinary skill in the art would not have been motivated to combine any of the references, taken singly or in combination, to achieve the invention as claimed.

Moreover, Applicants, through experimentation, have discovered benefits of heating wood within the claimed frequency range. These benefits are outlined in the submitted Declaration and are repeated here for purposes of continuity. For example, it was discovered that the heating pattern would be significantly improved at a lower frequency over microwave frequency power systems. These heating uniformity improvements at lower frequencies may be due to two reasons: 1) At a lower frequency, the electromagnetic wave energy can penetrate further into a large load. This means that the center of the load will be heated in roughly the same way as the surface of the load. This lowers heating and drying degrade in the product. At a higher microwave frequency, the electromagnetic energy cannot penetrate deeply into the load. This means the surface is hot – but the center is cold and poor heating uniformity results. 2) At the lower frequencies the electromagnetic waves are not “traveling waves” – but “standing waves”. This means that electric fields oscillate between the electrodes provided above and below the load. This encourages relatively uniform heating. At a higher, microwave frequency, the electromagnetic waves travel around the chamber and create locations that have high electric fields and others that have low electric fields. This is because the chamber acts as a resonant cavity. This causes hot and cold spots in the load and subsequently, poor heating uniformity.

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Further, microwave energy requires a special set of equipment that is designed for frequencies greater than 300 MHz. As the claimed frequency range is about 6 MHz to about 100 MHz, it is clear that a different set of equipment would be required to practice the present invention.

Applicants assert that for the amendments and reasons set forth above, independent Claims 1, 19 and 20 are allowable over the references of record. Claims 2-10, 12, 14 and 16-18 depend from Claim 1. These claims are also considered allowable as they set forth further limitations of their base claim.

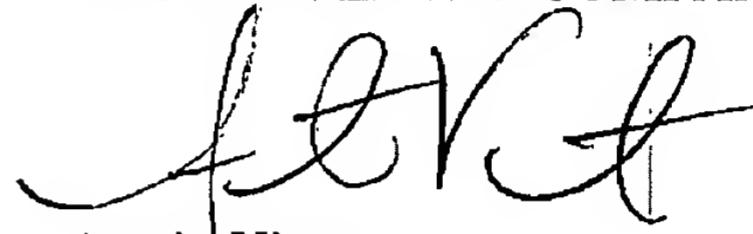
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CONCLUSION

In view of the foregoing discussion, Applicants respectfully submit that Claims 1-10, 12, 14 and 16-20 are in condition for allowance. If the Examiner has any further questions or comments, the Examiner may contact the Applicants' attorney at the number provided below.

RESPECTFULLY SUBMITTED,

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